

**Listing of the Claims:**

1           1. (Currently amended) An apparatus for transferring multiplexed multiple multi-  
2 bit messages across a bit level network, said apparatus comprising:

3           a network interface for accessing the bit level network, said network interface  
4 configured to transmit and receive a multi-bit message at a preselected one of a plurality  
5 of time-division multiplex addresses on each channel of a preselected channel set;

6           a processor in communication with said network interface;

7           a memory in communication with said processor; and

8           a second interface for connecting either an input or an output device to said  
9 processor;

10          whereby the multiple multi-bit messages are transmitted over said network  
11 interface.

1           2. (Original) The apparatus of Claim 1 wherein said network interface includes a  
2 clock signal and a data signal.

1           3. (Currently amended) The apparatus of Claim 2 wherein said data signal is a  
2 serial data stream synchronized with [the] said clock signal.

1           4. (Currently amended) The apparatus of Claim 2 wherein said data signal  
2 includes said multi-bit message, said multi-bit message including a command segment  
3 and a data segment, said command segment includes at least an operator and an operand.

1           5. (Original) The apparatus of Claim 4 wherein said command segment is a serial  
2 bitstream starting at a specified address determined by said clock signal on a first channel  
3 of said preselected channel set and said data segment is a serial bitstream starting at said  
4 specified address on a second channel of said preselected channel set.

1           6. (Original) The apparatus of Claim 4 wherein said operator includes a read  
2 request, said memory at a location specified by said operand contains data which is  
3 copied to said data segment.

1           7. (Original) The apparatus of Claim 4 wherein said operator includes a write  
2 request, said data segment contains data which is copied to said memory at a location  
3 specified by said operand.

1           8. (Currently amended) A method for transferring large amounts of complex data  
2 between a data link module and a host across a bit level network, said method comprising  
3 the steps of:  
4           (a) configuring a channel set to said data link module;  
5           (b) configuring a frame address to said data link module;  
6           (c) sending a multi-bit message from said host to said data link module, said  
7 multi-bit message including a message command segment on a first channel of said  
8 channel set at said data link module frame address and a message data segment on a  
9 second channel of said channel set at said data link module frame address, said message  
10 command segment including a register operand and at least either of a read request or a  
11 write request;  
12           (d) accessing a register in said data link module specified in said register operand  
13 as a specified register;  
14           (e) sending a reply from said data link module to said host, said reply including a  
15 reply command segment on a first channel of said channel [number pair] set at said data  
16 link module frame address and a reply data segment on a second channel of said channel  
17 [number pair] set at said data link module frame address.

1           9. (Original) The method of Claim 8 wherein said message command segment  
2 includes a read request, said step of accessing a register in said data link module further  
3 comprises the step of reading a value from said specified register as a read value.

1           10. (Original) The method of Claim 9 wherein said reply command segment  
2 equals said message command segment and said reply data segment contains said read  
3 value.

1           11. (Original) The method of Claim 8 wherein said message command segment  
2 includes a write request, said step of accessing a register in said data link module further  
3 comprises the step of writing said message data segment to said specified register.

1           12. (Original) The method of Claim 11 wherein said reply command segment  
2 equals said message command segment and said reply data segment equals said message  
3 data segment.

1           13. (Currently amended) A data link module connected to a data bus and a master  
2 clock line for use in a bit level network system having multiple data link modules, the  
3 master clock line for generating a predetermined number of time slots for a complete  
4 multiplexed channel, each time slot on the complete multiplexed channel associated with  
5 an address location of at least one data link module or a data bit on the data bus, said data  
6 link module comprising:  
7           means for interfacing with either an input device or an output device;  
8           means for receiving data from the data bus at a predetermined time slot on a first  
9 multiplexed channel, said data being a multiplexed [multibit] multi-bit message including  
10 at least a command segment and a data segment;  
11           means for sending data to the data bus during said predetermined time slot on a  
12 second multiplexed channel;  
13           means for processing said data;  
14           means for storing said data; and  
15           means for retrieving said data.

1           14. (New) A method for transferring large amounts of complex data between a  
2 data link module and a host across a bit level network, said method comprising the steps

3 of:

- 4 (a) configuring a channel set having at least two bit level time division  
5 multiplexed channels to said data link module;  
6 (b) configuring a frame address to said data link module;  
7 (c) sending a message from said host to said data link module, said message  
8 including a message command segment on a first channel of said channel set at said data  
9 link module frame address and a message data segment on at least one other channel of  
10 said channel set at said data link module frame address, said message command segment  
11 including a register operand and at least either of a read request or a write request;  
12 (d) accessing a register in said data link module specified in said register operand  
13 as a specified register;  
14 (f) sending a reply from said data link module to said host, said reply including a  
15 reply command segment on a first channel of said channel set at said data link module  
16 frame address and a reply data segment on at least one other channel of said channel set at  
17 said data link module frame address.

1 15. (New) The method of Claim 14 wherein said message command segment  
2 includes a read request, said step of accessing a register in said data link module further  
3 comprises the step of reading a value from said specified register as a read value.

1 16. (New) The method of Claim 15 wherein said reply command segment equals  
2 said message command segment and said reply data segment contains said read value.

1 17. (New) The method of Claim 14 wherein said message command segment  
2 includes a write request, said step of accessing a register in said data link module further  
3 comprises the step of writing said message data segment to said specified register.

1 18. (New) The method of Claim 17 wherein said reply command segment equals  
2 said message command segment and said reply data segment equals said message data  
3 segment.